



A TECHNICAL MARVEL IN CENTERLESS GRINDING



No. 2 - 10" (250 mm) CNC Centerless Grinder

*GUARDS & COVERS REMOVED FOR BETTER VISUALIZATION.



No. 1 - 4" (100 mm) Centerless Grinder

Solitaire No.1 Precision Centerless Grinding Machine offers simplicity of operation, reliability, ruggedness and cost efficiency. The grinder is designed and manufactured to international standards and is best suited for mass production of small components like pins, bushes, needles, medical implements, crank pins, pistons, motor shafts, cutting tools etc.

FEATURES

- Hydrodynamic grinding wheel spindle supported with sets of bearings consisting of three shoes each for constant center of rotation
- Rugged and stress relieved cast iron construction
- Infinitely variable Vector Control AC Regulating Wheel Spindle drive and digital tachometer
- Sturdy swivel plate supporting the double slide infeed system for precise taper correction
- Manual infeed slide positioning through a hand infeed lever and hand wheel actuated infeed screw and nut
- Grinding wheel truing unit equipped with profile hydraulic traverse slide and manual compensation (Does not include cam or diamond truing tool)
- Regulating wheel truing unit equipped with profile hydraulic traverse slide and manual compensation (Does not include cam or diamond truing tool)
- Simplified hydraulics with easy access for cleaning and maintenance
- Easily accessible electricals with door mounted switch for safety
- Solitaire standard runoff utilizing Solitaire test procedure and test pieces

Standard Accessories No.1 - 4" (100 mm) Grinder

- Grinding Wheel 16"x 4"x 10" (400 mm x 100 mm x 250 mm)
- Regulating Wheel 9"x 4"x 4" (225 mm x 100 mm x 100 mm)
- Wheel Mount for grinding wheel (4" width)
- 4" Thrufeed workrest with set of guides & workrest blade OR 4" Infeed workrest with workrest blade
- Wrench for Grinding Wheel
- Coolant tank with coolant pump
- Splash guards
- Hand tools
- Leveling screws with washers
- Electrical equipment suitable for 3 phase, 415 volts, 50 cycle, AC supply
- Instruction & parts manual – 1 copy

Optional Accessories

- Grinding Wheel Mount 4"
- Grinding wheel & regulating wheel spacers: 0.5", 1", 1.5", 2.5" & 3"
- 4" Thrufeed workrest. Includes one set of four guides. (Does not include work support blades)
- 4" Infeed workrest. (Does not include work support blade)
- Automatic ejector for infeed workrests
- Infeed Attachment - Pneumatically operated, hydraulically operated or One Axis Servo
- Infeed Screws : Double Pitch - allows opening of 1.93 mm (0.076"), Quadruple Pitch - allows opening of 3.86 mm (0.152"), Ball screws - for easy & accurate movement of slides supplied with zero backlash nut Recommended with automatic infeed attachment
- Cams : Straight Grinding wheel truing cam 4", Crowned Grinding wheel truing cam 4" Straight regulating wheel truing cam 4"
- Precision slide indicator with 0.001 mm dial indicator
- Precision swivel indicator with 0.001 mm dial indicator
- Diamonds - Single point : Grinding wheel & Regulating Wheel truing
- Grinding wheel motor - higher horsepower motor of 10 HP available
- Auto lube system for infeed & dresser slides
- Balancing stand & Balancing arbor
- Height checking fixture
- Set of leveling blocks
- Machine Lamp
- 45 m/sec. surface speed for grinding wheel
- 1 to 5 Axis CNC option available



No.2 - 8" (200mm) and No.2 - 10" (250 mm) Precision Centerless Grinder

Solitaire No.2 Precision Centerless Grinding Machine offers simplicity of operation, reliability, ruggedness and cost efficiency. Designed to be a workhorse for the long haul, Solitaire Centerless Grinders are manufactured to international standards with technology from **Cincinnati Milacron, USA**. We have manufactured over 600 machines of which over 300 have been exported to USA and the balance are working with various leading manufacturers in India in the Auto Ancillary, Cutting Tools, Textile Machinery & Engineering Industry.

FEATURES

- Hydrodynamic grinding wheel spindle supported with sets of bearings consisting of five shoes each for constant center of rotation
- Rugged and stress relieved cast iron construction
- Infinitely variable Vector Control AC Regulating Wheel Spindle drive and digital tachometer
- Sturdy swivel plate supports the double slide infeed system to facilitate fast, precise taper correction without the need to retrue the wheels to achieve parallelism
- Simplified hydraulics with easy access for cleaning and maintenance
- Automatic lubrication to grinding wheel with automatic shut off in case of lube system failure for grinding spindle
- Profile hydraulic truing for grinding wheel and regulating wheel. (Does not include cam or diamond truing tool)
- Easily accessible electricals with door mounted switch for safety
- 10" model supplied with outboard support for regulating wheel & 600 mm (24") diameter grinding wheel guard

Standard Accessories No.2 - 8" (200mm) and No.2 - 10" (250 mm) Centerless Grinder

- Grinding Wheel (20"x 8"x 12") or (20"x 10"x 12")
- Regulating Wheel (12" x 8" x 5") or (12" x 10" x 5")
- Wheel Mount for grinding wheel (8" or 10" width)
- 8" or 10" Thrufeed workrest with set of guides & workrest blade OR 8" or 10" Infeed workrest with workrest blade
- Wrench for Grinding Wheel
- Energy efficient grinding wheel motor
- Coolant tank with coolant pump
- Splash guards
- Hand tools
- Leveling screws with washers
- Electrical equipment suitable for 3 phase, 415 volts, 50 cycle, AC supply
- Instruction & parts manual – 1 copy

Optional Accessories

- Grinding Wheel Mount 4", 6", 8" & 10"
- Grinding wheel & regulating wheel spacers : 0.5", 1.5", 2", 2.5" & 3"
- Thrufeed workrest. Includes one set of four guides. (Does not include work support blades) Standard sizes - 4", 6", 8" & 10", Low thrufeed workrest to grind dia from 50 mm to 96 mm. Overhead guides can be ordered separately
- Infeed workrest. (Does not include work support blade) Standard sizes 4", 6", 8" & 10"
- Automatic ejector for infeed workrests
- Infeed Attachment - Pneumatically operated, hydraulically operated or One Axis Servo Infeed attachment
- Infeed Screws : Double Pitch - allows opening of 1.93 mm (0.076"), Quadruple Pitch - allows opening of 3.93 mm (0.152"), Ball screws - for easy & accurate movement of slides supplied with zero backlash nut. Recommended with automatic infeed attachment.
- Cams: Straight Grinding wheel truing cam 8" & 10", Crowned Grinding wheel truing cam 6", 8" & 10" Straight regulating wheel truing cam 8" & 10"
- Precision slide indicator - includes 0.001 mm dial indicator allows accurate movement of slides for setting size of job
- Precision swivel indicator with 0.001 mm dial indicator
- Diamonds - Single point : Grinding wheel & Regulating Wheel truing
- Grinding wheel motor - higher horsepower motor of 20 HP/25HP/30HP/40HP available
- Auto lube system for infeed & dresser slides
- Forced lube for regulating wheel housing
- Balancing stand & Balancing arbor
- Height checking fixture
- Jib Crane with manual hoist for loading of grinding wheel
- Set of leveling blocks
- Outboard support for regulating wheel, can also be supplied for 8" grinder
- 24" diameter x 8" wheel width capability for 8" grinder along with 20HP motor for grinding wheel
- Machine Lamp
- 45 m/sec. surface speed for grinding wheel
- Automatic balancer for grinding wheel
- 1 to 5 Axis CNC option available
- Machine enclosure, as required

No. 3 - 20" (500 mm) Precision Centerless Grinder



New No.3 Grinders are built for quality, maintainability and precision. The rugged base casting makes a vibration free grinding even with 75 HP motor. The complete CNC ensures minimal hydraulics and fewer components in machine to attain high reliability.

Hydrodynamic, self centering grinding wheel supported at both ends remain consistent under varying load.

FEATURES

- The Grinder is built with rugged and stress relieved casting
- The grinding wheel and regulating wheel spindles are supported at both ends to take heavy grinding load & still ensure size consistency
- The grinder can be used with thrufeed or infeed setup
- The grinder has 4 Axis CNC Siemens Controls
 - X-Axis for Infeed cycle
 - Y-Axis for Diamond Dressing across the wheel width
 - Z-Axis for Diamond Advance for grinding wheel dressing
 - R-Axis for Servo Drive for regulating wheel spindle
- The Y & Z Axis are interpolated to generate profile like steps, taper, radii and other complex profiles
- The programming is done by inserting real value
- The customized software has various safety related interlocks to meet Poka Yoke standards
- X Axis and Y Axis sides are moving with precision linear needle roller guideways and are practically friction free
- The regulating wheel dresser is equipped with geared Motor Drive and the diamond traverse axis is equipped with linear slides and ball screw for smooth dressing of Regulating Wheel
- The Grinder is equipped with simple external hydraulic power pack for spindle lubrication with pressure switch interlocks

Standard Accessories No.3 - 20" (500 mm) Grinder

- Grinding Wheel (24" x 20" x 12")
- Regulating Wheel (14" x 20" x 6")
- Wheel Mount for grinding wheel (20 "width)
- 20" Thrufeed workrest with set of guides & workrest blade OR 20" Infeed workrest with workrest blade
- Wrench for Grinding Wheel
- Energy efficient motor
- Splash guards
- Hand tools & wheel lifter
- Leveling screws with washers & leveling blocks
- Electrical equipment suitable for 3 phase, 415 volts, 50 cycle, AC supply
- Instruction & parts manual – 1 copy

Optional Accessories

- Grinding Wheel Spindle
- 20" Thrufeed Work Rests. Includes one set of four guides (Does not include work support blades)
- 20" Infeed workrest. (Does not include work support blade)
- Regulating Wheel truing Cam
- Grinding wheel motor - higher horsepower motor available of 60 HP / 75 HP
- Jib crane with hoist for wheel loading
- Automatic Grinding wheel balancer
- Machine enclosure, as required
- Loader / Unloader and automation

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CNC OPTIONS

Solitaire has developed one of the most user friendly controls dedicated to Centerless Grinding application. The controls are operated by Siemens 802D SL CNC controller with Siemens hardware. The software is provided for Thrufeed and Infeed to allow flexibility of the operations. It is user friendly operator Interface Monitor with easy to work software. Simple G Code driven software. The software is easily programmable to generate steps, tapers, radii and crown on grinding wheel and that can be customized to suit application. The software can be integrated with various CNC options and customized to suit different applications.

I INFEEED SLIDE (X AXIS) X Axis controls the infeed slide movement for grinding cycle. Optionally, Linear Roller Guideways for friction free movement is available for infeed slides.

II TWO AXIS CNC GRINDING WHEEL DRESSER (Y & Z AXIS) - The two Axis Grinding wheel dresser allows generation of profile on grinding wheel as required.

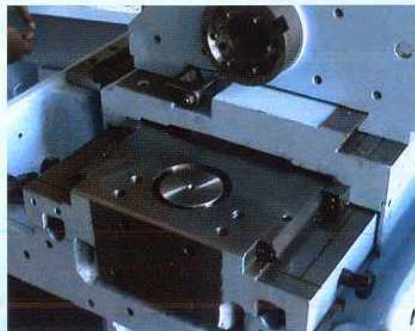
III REGULATING WHEEL DRIVE (R AXIS) - Regulating wheel drive is through Vector Induction motor and variable frequency drive. Optionally servo motor drive can be provided.

IV REGULATING WHEEL DRESSER (U AXIS) - The regulating wheel dresser traverse movement of diamond across the regulating wheel.

CNC DRESSER



LINEAR GUIDEWAY



SERVO REGULATING WHEEL DRIVE



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SPECIFICATION

Capacities	No.1 - 4" Grinder	No.2 - 8" Grinder	No.2 - 10" Grinder	No.3 - 20" Grinder
Work Diameter Range Standard workrest Low thrufeed workrest (Optional)	0 to 40 mm (0 to 1.500")	1.6 to 76 mm (0.0625 to 3") 51 to 95 m (2 to 3.75")	1.6 to 76 mm (0.0625 to 3") 51 to 95 m (2 to 3.75")	12 to 150 mm (0.5" to 6")
Grinding Wheel Diameter x Width x Bore Minimum Diameter Max. Wheel surface speed, New wheel	400 x 100 x 254 mm (16" x 4" x 10") 300 mm (12") 33 m / sec (6500sfpm)*	508 x 203 x 305 mm (20"x8"x12") 381 mm (15") 33 m / sec (6500sfpm)*	610 x 254 x 305 mm (24"x10"x12") 432 mm (17") 33 m / sec (6500sfpm)*	610 x 508 x 305 mm (24"x10"x12") 432 mm (17") 45 m / sec (9000sfpm)
Regulating Wheel Diameter x Width x Bore Minimum diameter Speed range	225 x 100 x 100 mm (9" x 4" x 4") 175 mm (7") Infinitely Variable 12 to 300 rpm	305 x 203 x 127 mm (12"x8"x5") 229 mm (9") Infinitely Variable 12 to 300 rpm	305 x 254 x 127 mm (12"x10"x5") 229 mm (9") Infinitely Variable 12 to 300 rpm	355 x 508 x 152.4 mm (14"x20"x6") 267 mm (10.5") Infinitely Variable 12 to 300 rpm
Drive Motor Grinding Wheel Standard Optional	7.5 HP (5.5 KW) 10 HP (5.5 KW))	15 HP (12 KW) 20 HP (15 KW), 25 HP (20 KW)	25 HP (20 KW) 30 HP (24 KW), 40 HP (30 KW)	18 Nm Servo Motor 22 Nm Servo Motor
Coolant Equipment Tank capacity Pump capacity	150 L (40 gal) 80 L / min (21 gal/min)	190 L (50 gal) 115 L / min (30 gal/min)	190 L (50 gal) 115 L / min (30 gal/min)	OPTIONAL AS REQUIRED
General Data Floor space (l x w x h)	1820 x 1230 x 1550 mm (71" x 48" x 61")	2235 x 1475 x 1575 mm (88" x 58" x 62")	2235 x 1475 x 1575 mm (88" x 58" x 62")	4000 x 2100 mm (157" x 82")
Approximate weight of basic grinder	2200 kg (4800 lb)	3855 kg (8500 lb)	4080 kg (9000 lb)	9750 kg (21500 lb)

*45 m / sec (9000 sfpm) available as option



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Adventure